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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN: 0648-XA933

Taking of Marine Mammals Incidental to Specified Activities; Construction of the East Span of the San Francisco-Oakland Bay Bridge

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice of issuance of an incidental harassment authorization.

SUMMARY: In accordance with provisions of the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that an Incidental Harassment Authorization (IHA) has been issued to the California Department of Transportation (CALTRANS) to take small numbers of California sea lions, Pacific harbor seals, harbor porpoises, and gray whales, by harassment, incidental to construction of a replacement bridge for the East Span of the San Francisco-Oakland Bay Bridge (SF-OBB) in California.

DATES: This authorization is effective from January 8, 2013, until January 7, 2014.

ADDRESSES: A copy of the application, IHA, and/or a list of references used in this document may be obtained by writing to P. Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910.

FOR FURTHER INFORMATION CONTACT: Shane Guan, NMFS, (301) 427-8418, ext 137, or Monica DeAngelis, NMFS, (562) 980-3232.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 et seq.) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, the taking is limited to harassment, notice of a proposed authorization is provided to the public for review.

Permission shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for certain subsistence uses and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring, and reporting of such taking are set forth. NMFS has defined “negligible impact” in 50 CFR 216.103 as “...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.”

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Except with respect to certain activities not pertinent here, the MMPA defines “harassment” as “any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].”

Section 101(a)(5)(D) establishes a 45-day time limit for NMFS review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of small numbers of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny issuance of the authorization.

Summary of Request

On October 19, 2011, CALTRANS submitted a request to NOAA requesting an IHA for the possible harassment of small numbers of California sea lions (Zalophus californianus), Pacific harbor seals (Phoca vitulina richardsii), harbor porpoises (Phocoena phocoena), and gray whales (Eschrichtius robustus) incidental to construction associated with a replacement bridge for the East Span of the SF-OBB, in San Francisco Bay (SFB), California. The proposed construction activities would last for approximately three years, starting 2013. After receiving NMFS comments on the IHA application regarding proposed monitoring measures, CALTRANS submitted a revised IHA application on April 23, 2012. The action discussed in this document is based on CALTRANS April 23, 2012, IHA application and NMFS Federal Register notice for the proposed IHA (77 FR 50473; August 21, 2012).

An IHA was previously issued to CALTRANS for this activity on February 7, 2011 and it expired on February 6, 2012 (76 FR 7156, February 9, 2011). No in-water construction activity was conducted during the period covered by that IHA. CALTRANS' renewal application indicates that the next stage of the construction activities will involve dismantling of the existing bridge, which is expected to start in fall 2013. However, some preparatory construction activities related to the dismantling may take place before the planned schedule. A detailed description of the proposed SF-OBB East Span project is provided in the CALTRANS' IHA application and in the Federal Register for the proposed IHA (77 FR 50473, August 21,

2012), and there is no change to the description of the activities. Therefore, the detailed description of the proposed construction activities is not repeated here, except for certain information that was missing in the earlier documents.

Supplemental Information Regarding CALTRANS Construction Activities

As stated in the IHA application and the Federal Register notice for the proposed IHA (77 FR 50473; August 21, 2012), work at the Yerba Buena Island (YBI) access would involve the construction of a small (approximately 650 m², or 7,000 ft²) H-pile supported trestle. The size of the H-pile was not identified in the proposed IHA. Discussion with CALTRANS indicated that it is unclear the size of the H-piles would be used. However, it is known that the contractor would most likely use HP H-piles, which with dimensions between 9.70 x 10.075 in. and 14.21 x 14.885 in., with length between 25 and 100 feet.

CALTRANS also stated that it's very unlikely that multiple pile driving would occur simultaneously. If in the case that more than one contractor would be employed to conduct the construction activity, maximum of two pile work could occur and most likely it would be one pile driving and one pile removal.

In addition, NMFS also worked with CALTRANS to revise the size of the exclusion zones and Level B harassment zones due to the lack of on-site data to establish specific zones for driving of 24- and 36-in piles, H-piles, and sheet piles. CALTRANS agreed that it will use the data of 48-in piles to establish the temporary exclusion zones and Level B harassment zones based on in-situ measurements conducted in 2009 (CALTRANS 2009) before revised zones are established based on on-site measurements during the test pile driving. Likewise, for vibratory pile driving, if hydroacoustic monitoring indicates that sound levels have the potential to exceed the 180 or 190 dB SPL, corresponding exclusion zones will be established. The temporary

exclusion zones and Level B zones for various pile driving and dismantling activities are listed in Table 1.

Table 1. Temporary exclusion and Level B harassment zones for various pile driving and dismantling activities

Pile Driving / Dismantling Activities	Pile Size (m)	Distance to 120 dB re 1 μ Pa (rms) (m)	Distance to 160 dB re 1 μ Pa (rms) (m)	Distance to 180 dB re 1 μ Pa (rms) (m)	Distance to 190 dB re 1 μ Pa (rms) (m)
Vibratory Driving	24	2,000	NA	NA	NA
	36	2,000	NA	NA	NA
	Sheet pile	2,000	NA	NA	NA
Attenuated Impact Driving	24	NA	1,000	235	95
	36	NA	1,000	235	95
Unattenuated Proofing	24	NA	1,000	235	95
	36	NA	1,000	235	95
Unattenuated Impact Driving	H-pile	NA	1,000	235	95
Dismantling		2,000	NA	100	100

Comments and Responses

A notice of receipt and request for public comment on the application and proposed authorization was published on August 21, 2012 (77 FR 50473). During the 30-day public comment period, the Marine Mammal Commission (Commission) provided the only comment.

Comment 1: The Commission recommends that NMFS promulgate regulations and condition them to require further public review if CALTRANS or the contractor proposes any substantial changes to the project plan.

Response: In the Federal Register notice for the proposed IHA (77 FR 50473; August 21, 2012), NMFS noted that CALTRANS' dismantling of the existing east span SF-OBB may take up to five years to complete, therefore, a five-year letter of authorization (LOA) under a rulemaking may seem to be preferable. However, subsequent discussion with CALTRANS indicated that activities involving the existing bridge dismantling are likely to differ from year to year, and the agency may not be able to predict annual construction activities in advance.

Further, the proposed dismantling activities could be completed in two to three years. Therefore, at this stage, NMFS concludes that the current best course of action for CALTRANS is to pursue annual IHAs.

Comment 2: The Commission requests NMFS require CALTRANS to implement full-time monitoring of Level A and B harassment zones during all in-water sound-producing activities (i.e., pile-driving and removal and bridge dismantlement activities).

Response: NMFS discussed with CALTRANS on marine mammal monitoring during its proposed in-water construction activities. As described in the Federal Register notice for the proposed IHA (77 FR 50473; August 21, 2012) and in CALTRANS IHA application, CALTRANS' planned construction includes an average annual installation of up to 635 temporary falsework piles, 1,925 steel sheet piles, and various mechanical dismantling activities. The extent of the work made it infeasible and costly to implement marine mammal monitoring for Level A and B harassment zones at all times, particularly since some of the Level B harassment zone for vibratory pile driving extends to a radius of 2 km. CALTRANS agrees to monitor the 180 and 190 dB exclusion zones and 160 dB behavioral harassment zone for all unattenuated impact pile driving of H-piles, and the 180 and 190 dB exclusion zones for attenuated impact pile driving and mechanical dismantling. CALTRANS will also monitor the 160 dB behavioral harassment zone for 20% of the attenuated impact pile driving, and 120 dB behavioral harassment zone for 20% of vibratory pile driving and mechanic dismantling. However, CALTRANS will not monitor the unattenuated impact pile proofing, which only lasts for less than one minute. Proposed proofing of piles will be limited to a maximum of two piles per day, and for less than 1 minute per pile, administering a maximum of twenty blows per pile.

CALTRANS states, and NMFS agrees, that the logistics of scheduling and mobilizing a monitoring team for activities that will last less than one minute is not practical.

Description of Marine Mammals in the Area of the Specified Activity

General information on the marine mammal species found in California waters can be found in Caretta et al. (2011), which is available at the following URL:

<http://www.nmfs.noaa.gov/pr/pdfs/sars/po2010.pdf>. Refer to that document for information on these species.

The marine mammals most likely to be found in the SF-OBB area are the California sea lion, Pacific harbor seal, and harbor porpoise. From December through May gray whales may also be present in the SF-OBB area. Information on California sea lion, harbor seal, and gray whale was provided in the November 14, 2003 (68 FR 64595), Federal Register notice; information on harbor porpoise was provided in the January 26, 2006 (71 FR 4352), Federal Register notice.

Potential Effects on Marine Mammals and Their Habitat

CALTRANS and NMFS have determined that open-water pile driving and pile removal, as well as dredging and dismantling of concrete foundation of existing bridge by saw cutting, flame cutting, mechanical splitting, drilling, pulverizing and/or hydro-cutting, as outlined in the project description, has the potential to result in behavioral harassment of California sea lions, Pacific harbor seals, harbor porpoises, and gray whales that may be swimming, foraging, or resting in the project vicinity while pile driving is being conducted. Pile driving and removal could potentially harass those few pinnipeds that are in the water close to the project site, whether their heads are above or below the surface.

Marine mammals exposed to high intensity sound repeatedly or for prolonged periods can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Kastak et al. 1999; Schlundt et al. 2000; Finneran et al. 2002; 2005). TS can be permanent (PTS), in which case the loss of hearing sensitivity is unrecoverable, or temporary (TTS), in which case the animal's hearing threshold will recover over time (Southall et al. 2007). Since marine mammals depend on acoustic cues for vital biological functions, such as orientation, communication, finding prey, and avoiding predators, marine mammals that suffer from PTS or TTS could have reduced fitness in survival and reproduction, either permanently or temporarily. Repeated noise exposure that leads to TTS could cause PTS.

Measured source levels from impact pile driving can be as high as 214 dB re 1 μ Pa @ 1 m. Although no marine mammals have been shown to experience TTS or PTS as a result of being exposed to pile driving activities, experiments on a bottlenose dolphin (Tursiops truncatus) and beluga whale (Delphinapterus leucas) showed that exposure to a single watergun impulse at a received level of 207 kPa (or 30 psi) peak-to-peak (p-p), which is equivalent to 228 dB (p-p) re 1 μ Pa, resulted in a 7 and 6 dB TTS in the beluga whale at 0.4 and 30 kHz, respectively. Thresholds returned to within 2 dB of the pre-exposure level within 4 minutes of the exposure (Finneran et al. 2002). No TTS was observed in the bottlenose dolphin. Although the source level of pile driving from one hammer strike is expected to be much lower than the single watergun impulse cited here, animals being exposed for a prolonged period to repeated hammer strikes could receive more noise exposure in terms of SEL than from the single watergun impulse (estimated at 188 dB re 1 μ Pa²-s) in the aforementioned experiment (Finneran et al. 2002).

Noises from dismantling of marine foundations by mechanical means include, but are not limited to, saw cutting, mechanical splitting, drilling and pulverizing. Saw cutting and drilling constitute non-pulse noise, whereas mechanical splitting and pulverizing constitute impulse noise. Although the characteristics of these noises are not well studied, noises from saw cutting and drilling are expected to be similar to vibratory pile driving, and noises from mechanical splitting and pulverizing are expected to be similar to impact pile driving, but at lower intensity, due to the similar mechanisms in sound generating but at a lower power outputs. CALTRANS states that drilling and saw cutting are anticipated to produce underwater sound pressure levels (SPLs) in excess of 120 dB RMS, but are not anticipated to exceed the 180 dB re 1 μ Pa (RMS). The mechanical splitting and pulverizing of concrete with equipment such as a hammer hoe has the potential to generate high sound pressure levels in excess of 190 dB re 1 μ Pa (RMS) at 1 m.

However, in order for marine mammals to experience TTS or PTS, the animals have to be close enough to be exposed to high intensity noise levels for prolonged period of time. Based on the best scientific information available, these sound levels are far below the threshold that could cause TTS or the onset of PTS.

In addition, chronic exposure to excessive, though not high-intensity, noise could cause masking at particular frequencies for marine mammals that utilize sound for vital biological functions. Masking can interfere with detection of acoustic signals such as communication calls, echolocation sounds, and environmental sounds important to marine mammals. Therefore, under certain circumstances, marine mammals whose acoustical sensors or environment are being severely masked could also be impaired from maximizing their performance fitness in survival and reproduction.

Masking occurs at the frequency band which the animals utilize. Therefore, since noise generated from in-water pile driving during the SF-OBB construction activities is mostly concentrated at low frequency ranges, it may have less effect on high frequency echolocation sounds by harbor porpoises. However, lower frequency man-made noises are more likely to affect detection of communication calls and other potentially important natural sounds such as surf and prey noise. It may also affect communication signals when they occur near the noise band and thus reduce the communication space of animals (e.g., Clark et al. 2009) and cause increased stress levels (e.g., Foote et al. 2004; Holt et al. 2009).

Unlike TS, masking can potentially impact the species at population, community, or even ecosystem levels, as well as individual levels. Masking affects both senders and receivers of the signals and could have long-term chronic effects on marine mammal species and populations. Recent science suggests that low frequency ambient sound levels have increased by as much as 20 dB (more than 3 times in terms of SPL) in the world's ocean from pre-industrial periods, and most of these increases are from distant shipping (Hildebrand 2009). All anthropogenic noise sources, such as those from vessels traffic, pile driving, dredging, and dismantling existing bridge by mechanic means, contribute to the elevated ambient noise levels, thus intensify masking.

Nevertheless, the sum of noise from the proposed SF-OBB construction activities is confined in an area of inland waters (San Francisco Bay) that is bounded by landmass, therefore, the noise generated is not expected to contribute to increased ocean ambient noise. Due to shallow water depth near the Oakland shore, dredging activities are mainly used to create a barge access channel to dismantle the existing bridge. Therefore, underwater sound propagation from dredging is expected to be poor due to the extreme shallowness of the area to be dredged.

Finally, exposure of marine mammals to certain sounds could lead to behavioral disturbance (Richardson et al. 1995), such as: changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities, changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping), avoidance of areas where noise sources are located, and/or flight responses (e.g., pinnipeds flushing into water from haulouts or rookeries).

The biological significance of many of these behavioral disturbances is difficult to predict, especially if the detected disturbances appear minor. However, the consequences of behavioral modification could be expected to be biologically significant if the change affects growth, survival, and reproduction. Some of these significant behavioral modifications include:

- Drastic change in diving/surfacing patterns (such as those thought to be causing beaked whale stranding due to exposure to military mid-frequency tactical sonar);
- Habitat abandonment due to loss of desirable acoustic environment; and
- Cessation of feeding or social interaction.

For example, at the Guerro Negro Lagoon in Baja California, Mexico, which is one of the important breeding grounds for Pacific gray whales, shipping and dredging associated with a salt works may have induced gray whales to abandon the area through most of the 1960s (Bryant et al. 1984). After these activities stopped, the lagoon was reoccupied, first by single whales and later by cow-calf pairs.

The onset of behavioral disturbance from anthropogenic noise depends on both external factors (characteristics of noise sources and their paths) and the receiving animals (hearing, motivation, experience, demography) and is also difficult to predict (Southall et al. 2007).

The proposed project area is not believed to be a prime habitat for marine mammals, nor is it considered an area frequented by marine mammals. Therefore, behavioral disturbances that could result from anthropogenic noise associated with SF-OBB construction activities are expected to affect only a small number of marine mammals on an infrequent basis.

Currently NMFS uses 160 dB re 1 μ Pa (RMS) at received level for impulse noises (such as impact pile driving, mechanic splitting and pulverizing) as the onset of marine mammal behavioral harassment, and 120 dB re 1 μ Pa (RMS) for non-impulse noises (vibratory pile driving, saw cutting, drilling, and dredging).

As far as airborne noise is concerned, based on airborne noise levels measured and on-site monitoring conducted during 2004 under a previous IHA, noise levels from the East Span project did not result in the harassment of harbor seals hauled out on Yerba Buena Island (YBI). Also, noise levels from the East Span project are not expected to result in harassment of the sea lions hauled out at Pier 39 as airborne and waterborne sound pressure levels (SPLs) would attenuate to levels below where harassment would be expected by the time they reach that haul-out site, 5.7 km (3.5 miles) from the project site. Therefore, no pinniped hauled out would be affected as a result of the proposed pile-driving. A detailed description of the acoustic measurements is provided in the 2004 CALTRANS marine mammal and acoustic monitoring report for the same activity (CALTRANS' 2005).

Short-term impacts to habitat may include minimal disturbance of the sediment where individual bridge piers are constructed. Long-term impacts to marine mammal habitat will be limited to the footprint of the piles and the obstruction they will create following installation. However, this impact is not considered significant as the marine mammals can easily swim around the piles of the new bridge, as they currently swim around the existing bridge piers.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action.

Mitigation Measures

For the issuance of the IHA for the planned 2012 – 2013 SF-OBB construction activities to reduce adverse impacts to marine mammals to the lowest extent practicable, NMFS requires the following mitigation measures to be implemented.

Use of Noise Attenuation Devices

To reduce impact on marine mammals, CALTRANS shall use marine pile driving energy attenuator (i.e., air bubble curtain system), or other equally effective sound attenuation method (e.g., dewatered cofferdam) for all impact pile driving, with the exception of pile proofing.

Establishment of Exclusion and Level B Harassment Zones

Before the commencement of in-water construction activities, which include impact pile driving, vibratory pile driving, and mechanical dismantling of existing bridge, CALTRANS shall establish exclusion zones where received underwater sound pressure levels (SPLs) are higher than 180 dB (rms) and 190 dB (rms) re 1 μ Pa for cetaceans and pinnipeds, respectively, and Level B behavioral harassment zones where received underwater sound pressure levels (SPLs) are higher than 160 dB (rms) and 120 dB (rms) re 1 μ Pa for impulse noise sources (impact pile driving) and non-impulses noise sources (vibratory pile driving and mechanic dismantling), respectively. Before the sizes of actual zones are determined based on hydroacoustic measurements, CALTRANS shall establish these zones based on prior measurements conducted during SF-OBB constructions, as described in Table 1 of this document.

Once the underwater acoustic measurements are conducted during initial test pile driving, CALTRANS shall adjust the size of the exclusion zones and Level B behavioral harassment zones, and monitor these zones accordingly.

NMFS-approved protected species observers (PSOs) shall conduct initial survey of the safety zone to ensure that no marine mammals are seen within the zones before impact pile driving of a pile segment begins. If marine mammals are found within the safety zone, impact pile driving of the segment would be delayed until they move out of the area. If a marine mammal is seen above water and then dives below, the contractor would wait 15 minutes for pinnipeds and harbor porpoise and 30 minutes for gray whales. If no marine mammals are seen by the observer in that time it would be assumed that the animal has moved beyond the safety zone. This 15-minute criterion is based on scientific evidence that harbor seals in San Francisco Bay dive for a mean time of 0.50 minutes to 3.33 minutes (Harvey and Torok, 1994), and the mean diving duration for harbor porpoises ranges from 44 to 103 seconds (Westgate et al., 1995).

Once the pile driving of a segment begins it cannot be stopped until that segment has reached its predetermined depth due to the nature of the sediments underlying the Bay. If pile driving stops and then resumes, it would potentially have to occur for a longer time and at increased energy levels. In sum, this would simply amplify impacts to marine mammals, as they would endure potentially higher SPLs for longer periods of time. Pile segment lengths and wall thickness have been specially designed so that when work is stopped between segments (but not during a single segment), the pile tip is never resting in highly resistant sediment layers. Therefore, because of this operational situation, if seals, sea lions, or harbor porpoises enter the safety zone after pile driving of a segment has begun, pile driving will continue and marine mammal observers will monitor and record marine mammal numbers and behavior. However, if

pile driving of a segment ceases for 30 minutes or more and a marine mammal is sighted within the designated safety zone prior to commencement of pile driving, the observer(s) must notify the Resident Engineer (or other authorized individual) immediately and follow the mitigation requirements as outlined previously in this document.

Soft Start

It should be recognized that although marine mammals will be protected from Level A harassment (i.e., injury) through marine mammal observers monitoring a 190-dB exclusion zone for pinnipeds and 180-dB exclusion zone for cetaceans, mitigation may not be 100 percent effective at all times in locating marine mammals. Therefore, in order to provide additional protection to marine mammals near the project area by allowing marine mammals to vacate the area prior to receiving a potential injury, CALTRANS and its contractor will also “soft start” the hammer prior to operating at full capacity. This should expose fewer animals to loud sounds both underwater and above water. This would also ensure that, although not expected, any pinnipeds and cetaceans that are missed during the initial exclusion zone monitoring will not be injured.

Power Down and Shut-down

As mentioned previously, although power down and shut-down measures will not be required for pile driving activities, these measures are required for mechanical dismantling of the existing bridge. The contractor perform mechanical dismantling work will stop in-water noise generating machinery when marine mammals are sighted within the designated exclusion zones.

Monitoring Measures

The following monitoring measures are required for the proposed SF-OBB construction activities.

Visual Monitoring

Besides using mitigation measures as a mean of implementing power down and shut-down measures for mechanical bridge dismantling, marine mammal monitoring will also be conducted to assess potential impacts from CALTRANS construction activities. CALTRANS will implement onsite marine mammal monitoring for 100% of all unattenuated impact pile driving of H-piles for 180- and 190-dB re 1 μ Pa exclusion zones and 160-dB re 1 μ Pa Level B harassment zone, attenuated impact pile driving (except pile proofing) and mechanical dismantling for 180- and 190-dB re 1 μ Pa exclusion zones. CALTRANS will also monitor 20% of the attenuated impact pile driving for the 160-dB re 1 μ Pa Level B harassment zone, and 20% of vibratory pile driving and mechanic dismantling for the 120-dB re 1 μ Pa Level B harassment zone.

Monitoring of the pinniped and cetacean exclusion zones shall be conducted by a minimum of three qualified NMFS-approved protected species observers (PSOs). Observations will be made using high-quality binoculars (e.g., Zeiss, 10 x 42 power). PSOs will be equipped with radios or cell phones for maintaining contact with other observers and CALTRANS engineers, and range finders to determine distance to marine mammals, boats, buoys, and construction equipment.

Data on all observations will be recorded and will include the following information:

- (1) location of sighting;
- (2) species;
- (3) number of individuals;
- (4) number of calves present;
- (5) duration of sighting;

- (6) behavior of marine animals sighted;
- (7) direction of travel;
- (8) when in relation to construction activities did the sighting occur (e.g., before, “soft-start”, during, or after the pile driving or removal).

The reactions of marine mammals will be recorded based on the following classifications that are consistent with the Richmond Bridge Harbor Seal survey methodology (for information on the Richmond Bridge authorization, see 68 FR 66076, November 25, 2003): (1) No response, (2) head alert (looks toward the source of disturbance), (3) approach water (but not leave), and (4) flush (leaves haul-out site). The number of marine mammals under each disturbance reaction will be recorded, as well as the time when seals re-haul after a flush.

Hydroacoustic Monitoring

The purpose of the underwater sound monitoring during dismantling of concrete foundations via mechanical means is to establish the exclusion zones of 180 dB re 1 μ Pa (rms) for cetaceans and 190 dB re 1 μ Pa (rms) for pinnipeds. Monitoring will occur during the initial use of concrete dismantling equipment with the potential to generate sound pressure levels in excess of 180 dB re 1 μ Pa (rms). Monitoring will likely be conducted from construction barges and/or boats. Measurements will be taken at various distances as needed to determine the distance to the 180 and 190 dB re 1 μ Pa (rms) contours.

The purpose of underwater sound monitoring during impact pile driving will be to verify sound level estimates and confirm that sound levels do not equal or exceed 180 dB re 1 μ Pa (rms).

Reporting

CALTRANS will notify NMFS prior to the initiation of the pile driving and dismantling activities for the removal of the existing east span. NMFS will be informed of the initial sound pressure level measurements for both pile driving and foundation dismantling activities, including the final exclusion zone and Level B harassment zone radii established for impact and vibratory pile driving and marine foundation dismantling activities.

Monitoring reports will be posted on the SFOBB Project's biological mitigation website (www.biomitigation.org) on a weekly basis if in-water construction activities are conducted. Marine mammal monitoring reports will include species and numbers of marine mammals observed, time and location of observation and behavior of the animal. In addition, the reports will include an estimate of the number and species of marine mammals that may have been harassed as a result of activities.

In addition, CALTRANS will provide NMFS with a draft final report within 90 days after the expiration of the IHA. This report should detail the monitoring protocol, summarize the data recorded during monitoring, and estimate the number of marine mammals that may have been harassed due to pile driving. If no comments are received from NMFS within 30 days, the draft final report will constitute the final report. If comments are received, a final report must be submitted within 30 days after receipt of comments.

Marine Mammal Monitoring Report from Previous IHA

As mentioned above, marine mammal monitoring during CALTRANS' pile driving activities and weekly marine mammal observation memorandums (CALTRANS 2007; 2010) indicate that only a small number of harbor seals (a total of 16 individuals since 2006) and 1 California sea lion (a total of 1 individual in 2009) were observed within ZOIs that could result in behavioral harassment. However, the reports state that none of the animals were observed as

been startled by the exposure, which could be an indication that these animals were habituated to human activities in San Francisco Bay. In addition, no harbor porpoise or gray whales were observed during pile driving activities associated to CALTRANS' SF-OBB construction work.

Estimated Take by Incidental Harassment

Marine mammal take estimates are based on marine mammal monitoring reports and marine mammal observations made during pile driving activities associated with the SF-OBB construction work authorized under prior IHAs. For pile driving activities conducted in 2006, 5 harbor seals and no other marine mammals were detected within the isopleths of 160 dB (rms) re 1 μ Pa during impact pile driving where air bubble curtains were deployed for mitigation measures (radius of zone of influence (ZOI) at 500 m) (CALTRANS 2007). For pile driving activities conducted in the 2008 and 2009 seasons, CALTRANS monitored a much larger ZOI of 120 dB (rms) re 1 μ Pa as a result of vibratory pile driving. A total of 11 harbor seals and 1 California sea lion were observed entering the 120 dB (rms) re 1 μ Pa ZOI (CALTRANS). However, despite the ZOI being monitored extended to 1,900 m for the 120 dB isopleths, CALTRANS did not specify which pile driving activities conducted in 2008 and 2009 used an impact hammer and which ones used a vibratory hammer. Therefore, at least some of these animals were not exposed to received level above 160 dB (rms) re μ Pa, and thus should not be considered as "taken" under the MMPA. No harbor porpoise or gray whales were observed during pile driving activities associated to CALTRANS' SF-OBB construction work (CALTRANS 2007; 2010).

Based on these results, and accounting for a certain level of uncertainty regarding the next phase of construction (which will include dismantling of the existing bridge by mechanical means), NMFS concludes that at maximum 50 harbor seals, 10 California sea lions, 10 harbor

porpoises, and 5 gray whales could be exposed to noise levels that could cause Level B harassment as a result of the CALTRAN' SF-OBB construction activities.

Negligible Impact and Small Numbers Analyses and Determinations

Pursuant to NMFS' regulations implementing the MMPA, an applicant is required to estimate the number of animals that will be "taken" by the specified activities (i.e., takes by harassment only, or takes by harassment, injury, and/or death). This estimate informs the analysis that NMFS must perform to determine whether the activity will have a "negligible impact" on the species or stock. Level B (behavioral) harassment occurs at the level of the individual(s) and does not assume any resulting population-level consequences, though there are known avenues through which behavioral disturbance of individuals can result in population-level effects. A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (i.e., population-level effects). An estimate of the number of Level B harassment takes alone is not enough information on which to base an impact determination.

In addition to considering estimates of the number of marine mammals that might be "taken" through behavioral harassment, NMFS considers other factors, such as the likely nature of any responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, migration, etc.), as well as the number and nature of estimated Level A takes, the number of estimated mortalities, and effects on habitat.

The CALTRANS' specified activities have been described based on best estimates of the planned SF-OBB construction project within the proposed project area. Some of the noises that would be generated as a result of the proposed bridge construction and dismantling project, such as impact pile driving, are high intensity. However, the in-water pile driving for the piles would

use small hammers and/or vibratory pile driving methods, coupled with noise attenuation mechanism such as air bubble curtains for impact pile driving, therefore the resulting exclusion zones for potential TS are expected to be extremely small (< 35 m) from the hammer. In addition, the source levels from vibratory pile driving are expected to be below the TS onset threshold. Therefore, NMFS does not expect that any animals would receive Level A (including injury) harassment or Level B harassment in the form of TTS from being exposed to in-water pile driving associated with SF-OBB construction project.

Based on marine mammal monitoring reports under previous IHAs, only 16 harbor seals and 1 California sea lion were observed within the 120 dB (in 2008 and 2009) or 160 dB (in 2006) ZOIs during in-water pile driving since 2006. NMFS estimates that up to 50 harbor seals, 10 California sea lions, 10 harbor porpoises, and 5 gray whales could be exposed to received levels above 120 dB (rms) during vibratory pile driving or 160 dB (rms) during impact pile driving for the next season of construction activities due to the large numbers of piles to be driven and the extended zones of influence from vibratory pile driving. These are small numbers, representing 0.15% of the California stock of harbor seal population (estimated at 34,233; Carretta et al. 2010), 0.00% of the U.S. stock of California sea lion population (estimated at 238,000; Carretta et al. 2010), 0.10% of the San Francisco-Russian River stock of harbor porpoise population (estimated at 9,181; Carretta et al. 2010), and 0.05% of the Eastern North Pacific stock of gray whale population (Allen and Angliss 2010).

Animals exposed to construction noise associated with the SF-OBB construction work would be limited to Level B behavioral harassment only, i.e., the exposure of received levels for impulse noise between 160 and 180 dB (rms) re 1 μ Pa (from impact pile driving) and for non-impulse noise between 120 and 180 dB (rms) re 1 μ Pa (from vibratory pile driving). In addition,

the potential behavioral responses from exposed animals are expected to be localized and short in duration.

These low intensity, localized, and short-term noise exposures (i.e., 160 dB re 1 μ Pa (rms) from impulse sources and 120 dB re 1 μ Pa (rms) from non-impulse sources), are expected to cause brief startle reactions or short-term behavioral modification by the animals. These brief reactions and behavioral changes are expected to disappear when the exposures cease. Therefore, these levels of received underwater construction noise from the proposed SF-OBB construction project are not expected to affect marine mammal annual rates of recruitment or survival. The maximum estimated 160 dB isopleths from impact pile driving is 500 m from the pile, and the estimated 120 dB maximum isopleths from vibratory pile driving is approximately 2,000 m from the pile. There is no pinniped haul-out area in the vicinity of the pile driving sites.

For the reasons discussed in this document, NMFS has determined that the impact of in-water pile driving associated with construction of the SF-OBB would result, at worst, in the Level B harassment of small numbers of California sea lions, Pacific harbor seals, harbor porpoises, and potentially gray whales that inhabit or visit SFB in general and the vicinity of the SF-OBB in particular. While behavioral modifications, including temporarily vacating the area around the construction site, may be made by these species to avoid the resultant visual and acoustic disturbance, the availability of alternate areas within SFB and haul-out sites (including pupping sites) and feeding areas within the Bay has led NMFS to determine that this action will have a negligible impact on California sea lion, Pacific harbor seal, harbor porpoise, and gray whale populations along the California coast.

In addition, no take by Level A harassment (injury) or death is anticipated and harassment takes should be at the lowest level practicable due to incorporation of the mitigation measures mentioned previously in this document.

National Environmental Policy Act (NEPA)

NMFS' prepared an Environmental Assessment (EA) for the take of marine mammals incidental to construction of the East Span of the SF-OBB and made a Finding of No Significant Impact (FONSI) on November 4, 2003. Due to the modification of part of the construction project and the mitigation measures, NMFS reviewed additional information from CALTRANS regarding empirical measurements of pile driving noises for the smaller temporary piles without an air bubble curtain system and the use of vibratory pile driving. NMFS prepared a Supplemental Environmental Assessment (SEA) and analyzed the potential impacts to marine mammals that would result from the modification of the action. A Finding of No Significant Impact (FONSI) was signed on August 5, 2009. A copy of the SEA and FONSI is available upon request (see ADDRESSES).

Endangered Species Act (ESA)

NMFS has determined that issuance of the IHA will have no effect on listed marine mammals, as none are known to occur in the action area.

Authorization

NMFS has issued an IHA to CALTRANS for the potential harassment of small numbers of harbor seals, California sea lions, harbor porpoises, and gray whales incidental to construction of a replacement bridge for the East Span of the San Francisco-Oakland Bay Bridge in California, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: January 7, 2013

Helen M. Golde,
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